

# Optimus gas absorption heat pump



- Low carbon renewable technology
- Gas efficiencies up to 152% gross
- Low noise levels
- Low NO<sub>x</sub> emissions
- Continuous operation even in defrost mode
- Low electrical input
- Indoor and outdoor models available

# Optimus gas absorption heat pump

Optimus gas absorption heat pumps provide an environmentally friendly, efficient method of providing LTHW which can be used for space heating or for the generation of hot water. The basic principle of operation is that the Optimus unit captures low grade energy from surrounding air and works in combination with an integral gas-fired condensing burner. Efficiencies of up to 152% can be achieved at a flow temperature of 50°C and an ambient temperature of 7°C. Optimus can operate in ambient conditions as low as -20°C and will work continuously, even in defrost mode. LTHW can be supplied at temperatures of up to 65°C for heating applications and up to 70°C for domestic hot water.

## Product features

- Suitable for natural gas or propane
- 40kW output at operating conditions of 40°C flow temperature and 5°C ambient air
- Operates with ambient temperatures as low as -20°C
- ODP (Ozone depletion potential) = Zero
- GWP (Global warming potential) = Zero

## Outdoor and indoor models

Optimus gas absorption heat pumps are designed for external installation and as such provide a convenient space saving solution. Model LCGHPi, is available where indoor installation is preferred. Three models of Optimus are available:

**LSGHP-40HT** Standard outdoor unit

**LCGHP-40HT** Low noise outdoor unit (*See the technical specification table on back page for dB figures*)

**LCGHPI-40HT** Indoor unit which complies fully with EN378, requires only a 1m<sup>2</sup> louvred opening for air to be taken into the plantroom and is supplied with an easily removable duct section on top for the air outlet. This model has an 80mm twin-pipe flue system as standard.



Optimus  
Outdoor model



Optimus  
Indoor model

## Integrated renewable systems

Gas absorption heat pumps are an excellent method of providing heating and hot water at high efficiencies. As a renewable technology the Optimus range will assist in meeting planning requirements and also BREAMM assessments. The ability to integrate with traditional gas-fired condensing boilers and/or water heaters ensures that high levels of operating efficiencies can be achieved, with a reduction in capital cost – when compared to a ‘stand alone’ heat pump heating/hot water system.

Lochinvar Ltd is able to provide Integrated solutions with the following products:

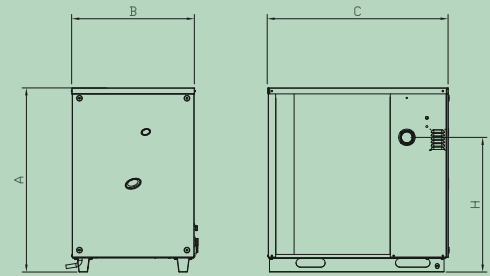
- Gas-fired condensing boilers
- Gas-fired condensing water heaters
- Thermal store – which can operate with up to three different energy sources
- Buffer vessels
- Indirect water heaters

## Low NO<sub>x</sub> emissions

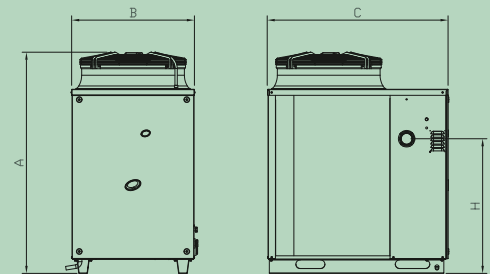
Optimus gas absorption heat pumps have low NO<sub>x</sub> emissions, which makes them particularly suitable for applications which are subject to BREAMM assessment. At only 40mg/kWh @ 0% O<sub>2</sub>, all models qualify for the maximum 3 credits.

# Dimensional drawings

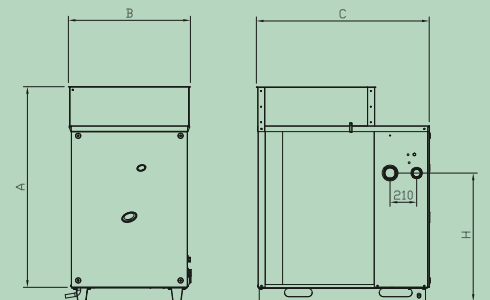
Legend	Description	UNIT	LSGHP-40HT	LCGHP-40HT	LCGHPI-40HT
A	Height	mm	1281	1537	1588
B	Width	mm	848	848	848
C	Depth	mm	1258	1258	1258
H	Height to flue outlet	mm	938	938	938
	Flow/return connection	BSPRp	1¼"	1¼"	1¼"
	Gas connection	BSPRp	¾"	¾"	¾"
	Flue outlet	mm	80	80	80



LSGHP-40HT Standard- outdoor unit



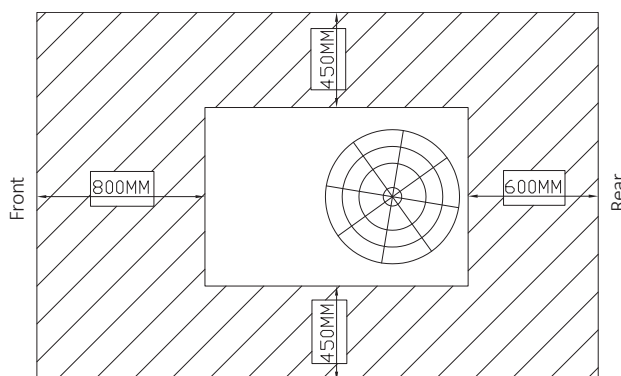
LCGHP-40HT low noise version- outdoor unit



LCGHPI-40HT Indoor unit

## Clearances

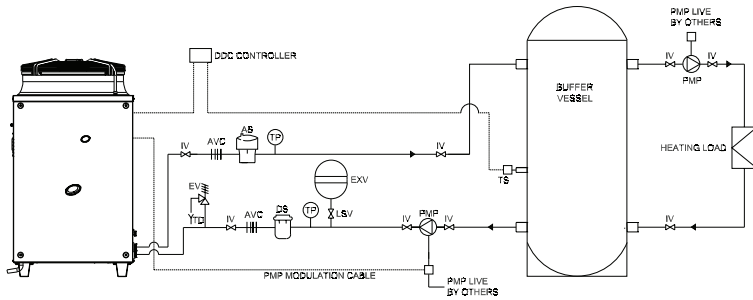
Front	800 mm
Rear	600 mm
Sides	450 mm



# Typical schematic drawings

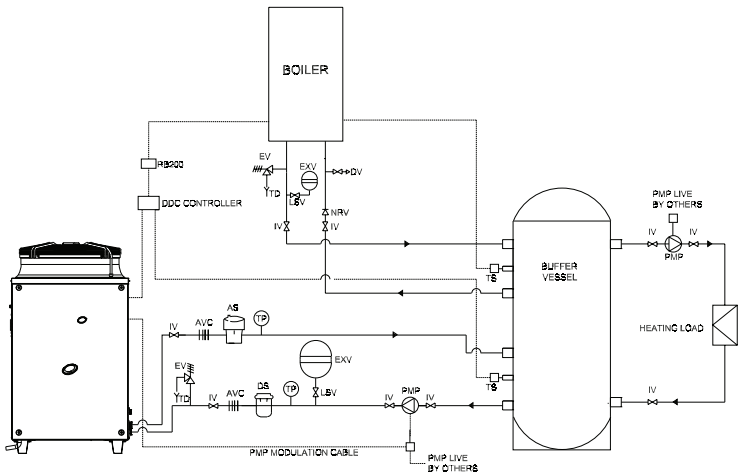
## Single optimus gas absorption heat pump arrangement

'Stand alone' Optimus GAHP installed with buffer vessel and low loss header providing LTHW for heating and/or hot water requirements.



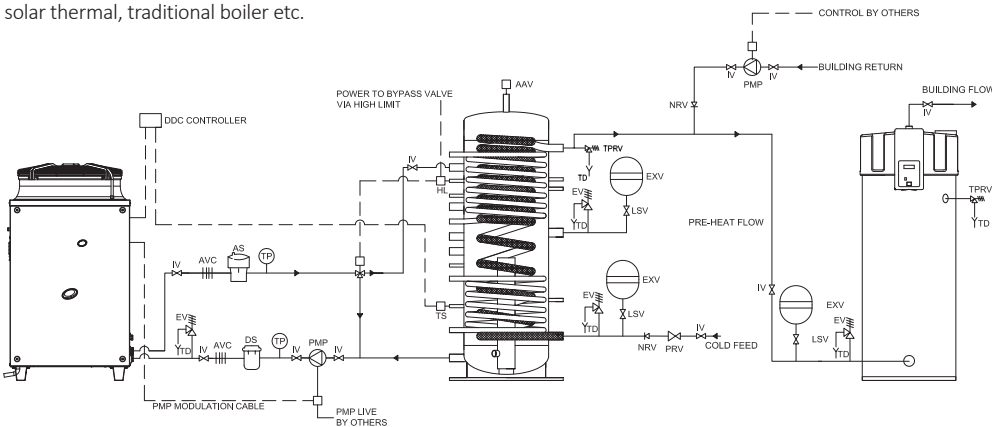
## Optimus / condensing gas-fired boiler combination

Optimus GAHP integrated with gas-fired condensing boiler, providing an efficient, cost effective solution to heating and hot water requirements. Integral controls give priority to the Optimus unit with the gas-fired condensing boiler only firing in periods of high demand.



## Optimus / condensing water heater combination

Optimus GAHP integrated with gas-fired condensing water heater, with the Optimus unit providing pre-heated feed water, reducing the use of fossil fuel. The integration includes the HSV Thermal Store which provides further flexibility as it is capable of integrating with a further two heat sources, for example solar thermal, traditional boiler etc.



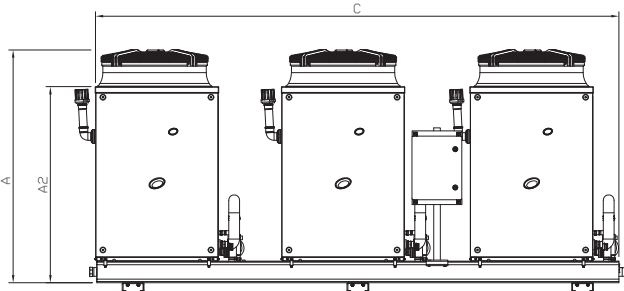
## Legend for all Optimus schematic drawings

TPRV	Temperature and pressure relief valve	IV	Isolation valve	PRV	Pressure reducing valve
EV	Expansion relief valve	LSV	Lock-shield valve	AVC	Anti-vibration coupling
EXV	Expansion vessel	PMP	Pump	AS	Air separator
TD	Tundish	TS	Temperature sensor	HL	High limit stat
NRV	Non-return valve	TP	Temperature and pressure gauge	DS	Dirt separator

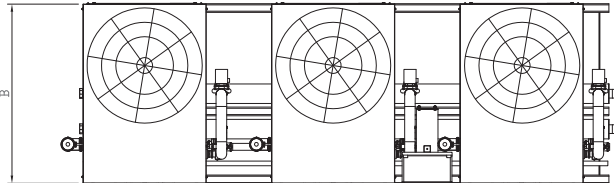
# Optimus skid mounted packages

The benefits of offsite fabrication are well established and provide many practical advantages when compared with on site installation. Combinations of 2 to 5 Optimus units are available within a neat Skid Mounted Package providing the opportunity to save installation time and cost.

Optimus skid mounted packages are available for outdoor installation only, and are pre-piped, pre-wired and supplied complete with external sensor and integral cascade control.



Three-unit skid mounted package front view



Three-unit skid mounted package plan view

## Dimensions – skid mounted packages

Package	Output*	Height A	Height A2	Depth B	Length C	Weight	Number of units in package
		mm	mm	mm	mm	kg	
LCGHP-RTA00266HT	76.6	1650	1400	1245	2314	950	2
LCGHP-RTA00399HT	114.9	1650	1400	1245	3610	1410	3
LCGHP-RTA00532HT	153.2	1650	1400	1245	4936	1890	4
LCGHP-RTA00665HT	191.9	1650	1400	1245	6490	2370	5

\* At operating conditions ambient 7°C flow temperature 50°C

# Technical specification

Heat pump model		LSGHP-40HT standard outdoor unit	LCGHP-40HT low noise outdoor unit	LCGHPi-40HT indoor unit
Nominal input (gross)	kW	25.2	25.2	25.2
Gas flow rate	m <sup>3</sup> /hr	2.72	2.72	2.72
<b>Efficiency data - part L2</b>				
Nominal output 1*	kW	38.3	38.3	38.3
GUE (gas usage efficiency) 1*	%	152	152	152
Nominal output 2**	kW	31.1	31.1	31.1
GUE (gas usage efficiency) 2**	%	124	124	124
Nominal output 3***	kW	32	32	32
GUE (gas usage efficiency) 3***	%	127	127	127
<b>Efficiency data - ErP and energy label</b>				
EcoDesign energy label rating		A+	A+	A+
Seasonal space heating energy efficiency (average climate conditions)	%	111	113	113
NOx emissions (corrected to 0% O <sub>2</sub> )	ppm	23	23	23
NOx emissions (corrected to 0% O <sub>2</sub> )	mg/kWh	40	40	40
<b>General data</b>				
Dimension (height)	mm	1281	1537	1580
Dimension (width)	mm	848	848	848
Dimension (depth)	mm	1258	1258	1258
Weight full	kg	390	400	405
Flow connection	BSP Rp	1½"	1½"	1½"
Return connection	BSP Rp	1½"	1½"	1½"
Gas connection	BSP Rp	¾"	¾"	¾"
Electrical requirements		230v/1ph/50hz		
Power consumption	W	90	83	93
Maximum outlet temperature	°C	70	70	70
Maximum return temperature	°C	60	60	60
Refrigerant fluid	Ammonia R717	kg	7	7
	Water H <sub>2</sub> O	kg	10	10
Sound pressure level indoor	db	n/a	n/a	n/a
Sound pressure level outdoor	db	80	74	74

\* At operating conditions ambient 7°C flow temperature 50°C

\*\* At operating conditions ambient 7°C flow temperature 65°C

\*\*\* At operating conditions ambient -7°C flow temperature 50°C

Energy label, product fiche and ErP data table are available at [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk)

More detailed information on Optimus can be found in our application guide at [www.lochinvar.ltd.uk](http://www.lochinvar.ltd.uk).

## Ancillary options

- External temperature sensor
- Single unit primary pump 2m head
- Single unit primary pump 5m head
- LCGHP cascade control
- LCGHP DHW control
- Lochinvar boiler interface
- Anti-vibration mountings single unit
- Buffer vessel temperature probe
- Adjustable flat roof mounting frame



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*Lochinvar Ltd reserves the right to change specifications without prior notice*

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